Techrete Concrete Pavement Patching on I-215

Interim Report

Experimental Feature X(04)02

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Introduction

UDOT highway bridge decks are subject to constant dynamic loading and freeze/thaw cycles over their lives. These and other factors can cause the concrete decks to spall. A new product, Techcrete by Crafco, a hot pour rapid set polymeric material, had performed well on I-15 concrete pavement as documented in Experimental Feature No. X(03)07 of this report. It was, therefore, decided to install and evaluate it as a potential bridge deck spall repair product. UDOT bridges C-699 and C-701 on NB I-215 over I-80 and I-15 off-ramps were selected for the evaluation.

Objectives

The objective of the test was to evaluate the speed and ease of product installation and to observe the durability of the product over two or three years.

Larry Limberis, Maintenance Station #230 Supervisor and Ron Hall, Maintenance Station #230 agreed to monitor the material throughout the winter as they snowplow and keep UDOT Research up to date on its performance.

Construction & Cost

The product was installed in August of 2004. Those attending the installation were:

Larry Limberis, Maintenance Station Supervisor #230
Ron Hall, Maintenance Station #230
2 Installers from CRAFCO (in the fluorescent vests)
Prison Crew
Michelle Page, UDOT Development Engineer
Richard “Barry” Sharp, UDOT Research Specialist
DaveEixenberger, UDOT Structures, Operations Engineer
Mike Ellis, UDOT Structures, Bridge Inspector

Area covered with this first installation: (Potholes were approximately 2 inches deep.)

Large Pothole = 12 ft x 14 ft
Two Small Potholes = 3 ft x 2 ft & 1 ft x 1 ft

Materials used:

2750 lbs polymer
5 gallons of primer
6 bags of gravel

CRAFCO representative quoted the materials at $1.25 per pound.

The following photos illustrate elements of the installation:

Prep work consisted of saw cutting edges and hammering out the delaminated concrete.

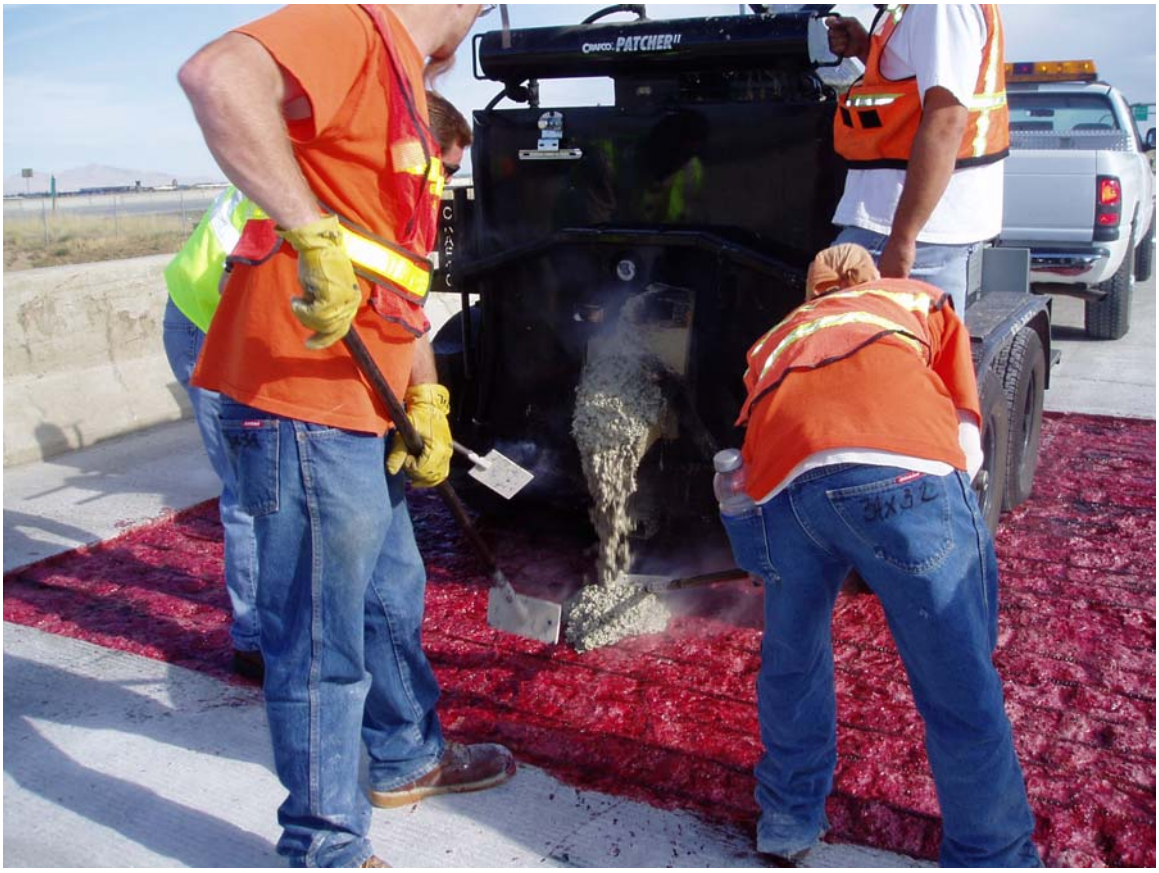
Concrete was heated prior to application of the primer.

Primer was splashed on, then broomed and brushed in until it fully coated the exposed concrete and reinforcing steel.

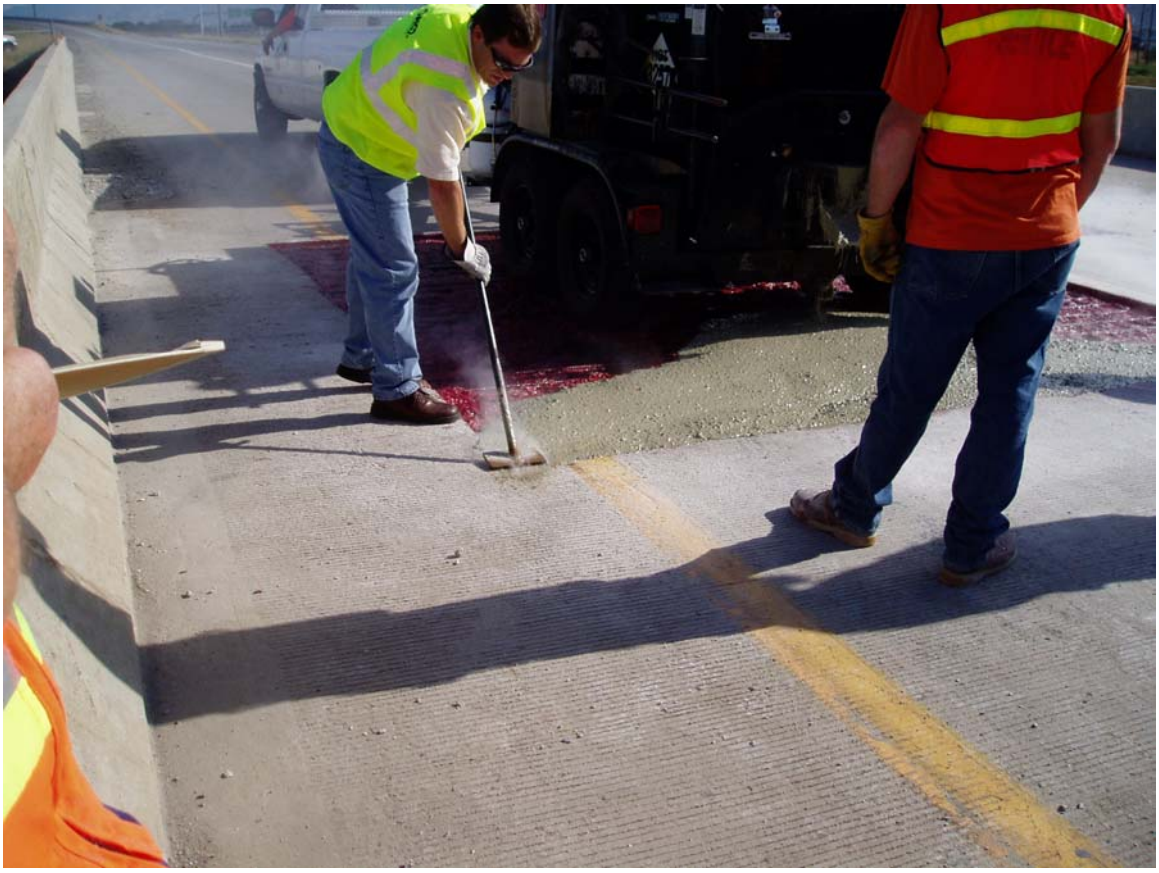

CRAFCO

All edges of the patch area were also covered with the primer.

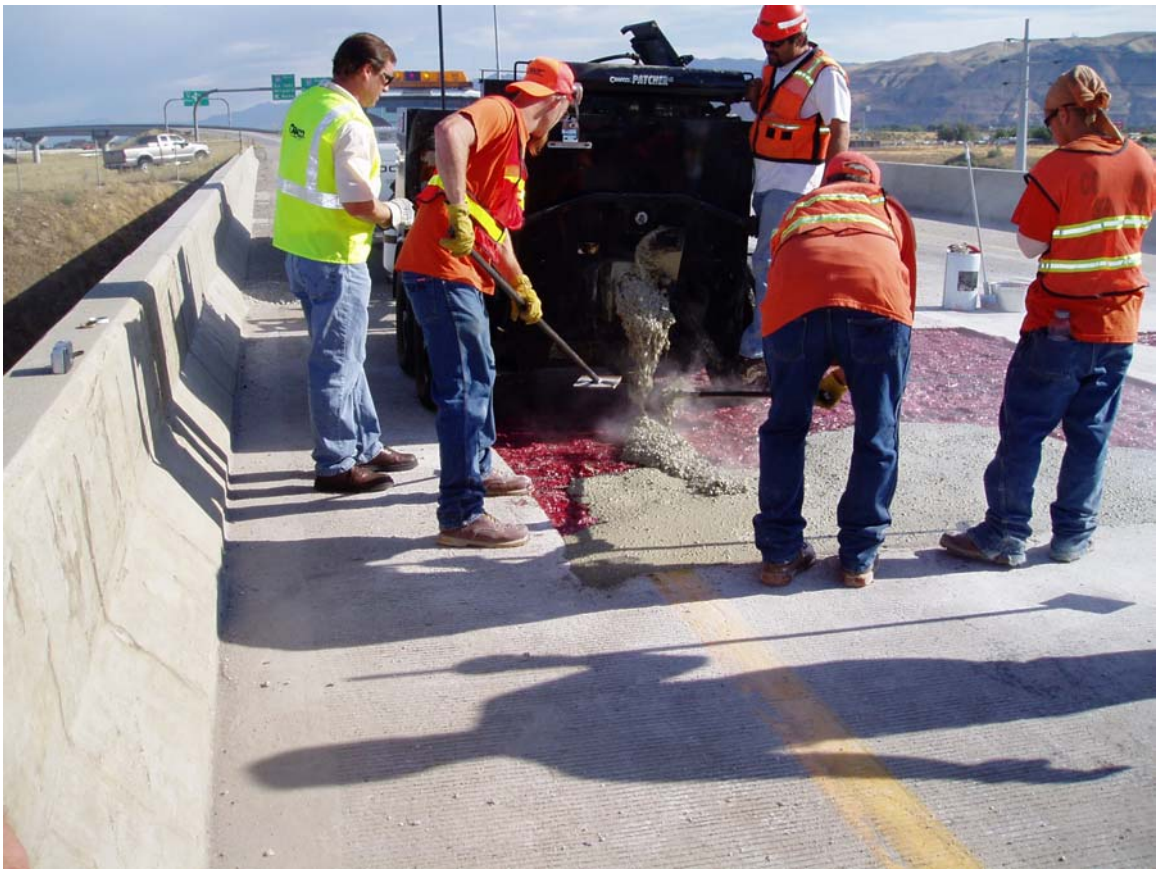
The initial “plug” was emptied into a bucket and dumped back into the mixer to be reheated.



Heated spreaders were used to push the polymer into place where it began self-leveling.



The corners of the patch area were worked into place.

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The polymer “sets” quickly as it cools. This makes it difficult to push into place over a large area.

The polymer was reheated for greater workability.

Bubbles were present in the hot polymer.

“Sanding” of the polymer could not begin until all the bubbles had popped.

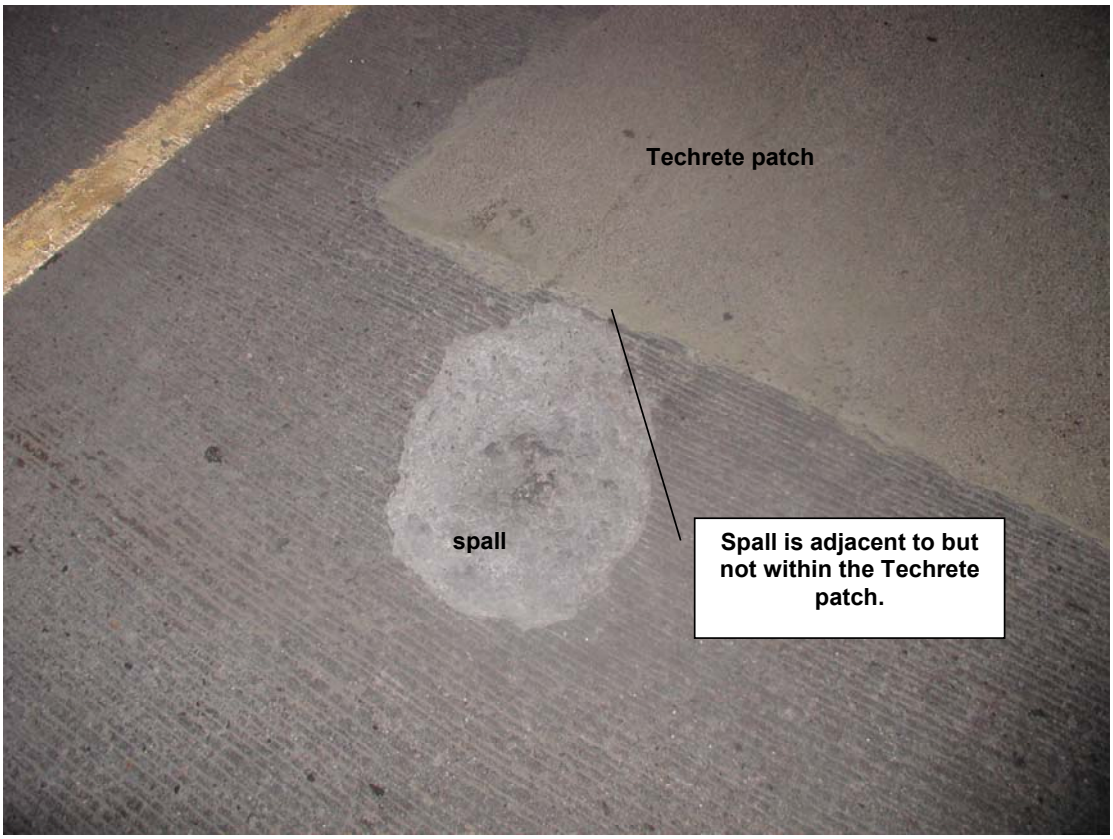
The polymer was heated to help the last bubbles pop and warm the surface for the application of the sand.

The sand was patted into place to assure bonding.

Interim Results

The following photos taken in the spring of 2005 show that the patch seems to be intact.

Techrete patch appears to be intact with no evidence of degradation



Conclusions

Athough the product performance seems good after one winter, overall performance is still inconclusive. The product will continue to be monitored over the next two years.

Recommendations

Recommendations are pending further monitoring.